

REMARKS

In the Office Action dated October 4, 2004, the Examiner rejected claims 17, 19-22, 24, and 32 under 35 U.S.C. § 102(e), and claims 18 and 23 under 35 U.S.C. § 103(a). The Examiner objected to claims 25 and 26, but indicated they would be allowable if rewritten in independent form. Applicants have rewritten claim 25 in independent form and submit that claim 25 is allowable as amended. Claim 26 depends from claim 25. Accordingly, Applicants submit that claim 26 is also allowable as amended to correct errors.

The species of Fig. 1 was elected during a telephone call between the Examiner and Applicants' representative on September 13, 2004. Due to this species election, the Office Action indicates that claims 27-31 and 33-37 stand withdrawn from consideration as being drawn to a non-elected species. However, claims 27-31 and 35-37 depend from claim 25, which Applicants have rewritten in allowable format. Thus, Applicants believe that claims 27-31 and 35-37 should not be withdrawn from consideration and should be allowed.

Applicants have also amended claims 17, 22, 24, 27, 30, and 35. No new matter has been added. Claim 17 has been amended to incorporate the limitations of claim 18 and claim 22 has been amended to incorporate the limitations of claim 23. Claims 18 and 23 have been canceled. Claims 24, 27, and 30 have been amended to correct errors. Claim 35 has been amended to depend from allowed claim 25.

Applicants recite in amended claims 17 and 22 an apparatus for liquid treating and drying at least one flat semiconductor substrate. The apparatus includes a tank, a means for moving the substrate into the tank, and a means for moving the substrate out of the tank. The apparatus of

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claim 17 also includes a means for producing a flow of a gaseous substance that is directed at an intersection line between the substrate and a liquid present in the tank, while the apparatus of claim 22 also includes a means for directing a heat supply to the intersection line between the substrate and the liquid present in the tank. By directing the gaseous flow or the heat supply to the intersection line between the substrate and the liquid present in the tank, a surface tension gradient is obtained allowing for efficient and fast removal of liquid from the surface of the substrate.

The Office Action states that U.S. Patent No. 6,412,501 ("Onoda") and U.S. Patent No. 6,354,311 ("Kimura") do not show or suggest a means for directing a gaseous flow or a heat supply to the intersection line between the substrate and the liquid present in the tank. (Office Action, page 3.) The Office Action then states that it would have been obvious to one having ordinary skill in the art to modify Onoda or Kimura with the teachings of U.S. Patent No. 6,119,367 ("Kamikawa"). (Office Action, page 3.) However, the combination Kamikawa with either Onoda or Kimura fails to show or suggest a means for directing a gaseous flow or a heat supply to the intersection line between the substrate and the liquid present in the tank.

Kamikawa describes applying a gas to spaces between surfaces of wafers and vibration transmitting plates. (See, e.g., Kamikawa, column 10, lines 41-48.) However, this occurs **after** the wafers have been removed from a treatment bath.

First, after the wafers W are immersed and cleaned in the cleaning solution L in the treatment bath 21 (specifically in the inner bath 21a), the wafer guide 33 is moved upwards to position the wafers W between the vibration transmitting plates 24 of the vibration transmitting means 20.

(Kamikawa, column 10, lines 36-40.) As seen in Kamikawa's Fig. 2, once the wafer guide positions the wafers between the vibration transmitting plates, the wafers are no longer in contact with the


cleaning solution present in the treatment bath. The wafers and the cleaning solution are completely separated. Thus, it is impossible to direct either a gaseous flow or a heat supply to an intersection line between the wafers and the cleaning solution because no intersection line exists. Hence, Kamikawa does not show or suggest a means for directing a gaseous flow or a heat supply to the intersection line between the substrate and the liquid present in the tank.

Because none of Onoda, Kimura, and Kamikawa show or suggest a means for directing a gaseous flow or a heat supply to the intersection line between the substrate and the liquid present in the tank, Applicants submit that claims 17 and 22 are not obvious in light of the combination of Kamikawa with either Onoda or Kimura. Claims 19-21 depend from claim 17. Claims 24 and 32 depend from claim 22. Accordingly, Applicants also submit that claims 19-21, 24, and 32 are also not obvious in light of the combination of Kamikawa with either Onoda or Kimura for at least the reasons set forth above.

CONCLUSION

In light of the above amendments and remarks, Applicants submit that the present application is in condition for allowance and respectfully requests notice to this effect. The Examiner is requested to contact Applicants' representative below if any questions arise or she may be of assistance to the Examiner.

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